

## Claims

1. An optical fiber coupling unit comprising an optical fiber and a sleeve, which sleeve is arranged on an end portion of the optical fiber and terminates flush with the associated extreme end of the optical fiber, so that on the one extreme end there is formed a continuous coupling face, with which the optical fiber coupling unit can be placed onto an optical waveguide component to establish an optical coupling.
2. The optical fiber coupling unit as claimed in claim 1, the optical fiber being closely surrounded by the sleeve, in particular with a distance between the optical fiber and the inner wall of the sleeve of 1-5  $\mu\text{m}$ .
3. The optical fiber coupling unit as claimed in claim 1, wherein the optical fiber being bonded into the sleeve by means of adhesive.
4. The optical fiber coupling unit as claimed in claim 1 wherein the coupling face extends at an angle of 82 degrees with respect to the longitudinal axis of the optical fiber.
5. The optical fiber coupling unit as claimed in claim 1, wherein the sleeve is made of a material which has a coefficient of thermal expansion corresponding approximately to that of the optical fiber.
6. The optical fiber coupling unit as claimed in claim 1, wherein the sleeve is made of a glass or a ceramic material.
7. The optical fiber coupling unit as claimed in claim 1, wherein the sleeve having an outside diameter of at least 2 mm and of at most 10 mm.
8. The optical fiber coupling unit as claimed in claim 1, the sleeve having a planar surface on its circumferential surface.
9. The optical fiber coupling unit as claimed in claim 8, the planar surface extending up to the coupling face.
10. The optical fiber coupling unit as claimed in claim 1, the optical fiber being provided with sheathing, by which the optical fiber is surrounded, and the end portion of the optical fiber accommodated in the sleeve being freed of

the sheathing.

11. The optical fiber coupling unit as claimed in claim 10, the sleeve extending with a sleeve portion remote from the extreme end of the optical fiber over the sheathing and preferably surrounding the sheathing closely, in particular with a distance between the sheathing and the inner wall of the sleeve of 1-5  $\mu\text{m}$ .
12. The optical fiber coupling unit as claimed in claim 11, the sleeve being transversely slit in its sleeve portion remote from the one extreme end of the optical fiber, thereby forming a slit space, the optical fiber with its sheathing being arranged in the slit space.
13. The optical fiber coupling unit as claimed in claim 10, the sleeve being provided in two parts comprising of an inner sleeve and an outer sleeve, the inner sleeve being arranged on the exposed end portion of the optical fiber, and the outer sleeve extending with a sleeve portion remote from the one extreme end of the optical fiber over the sheathing.
14. The optical fiber coupling unit as claimed in claim 13, the inner sleeve being bonded by means of adhesive into the outer sleeve.
15. The optical fiber coupling unit as claimed in claim 13, the inner sleeve having the same outside diameter as the sheathing.
16. The optical fiber coupling unit as claimed in claim 1, the sleeve having a length of at least 2 mm.
17. An optical waveguide arrangement comprising an optical waveguide component, in particular an optical chip, said optical waveguide component having a placement face, from which an optical structure extends, and an optical fiber coupling unit, having an optical fiber attached thereto, which is placed with its coupling face against the placement face of the optical waveguide component, thereby establishing an optical coupling between the optical fiber and the optical structure, and is fastened on said placement face.
18. An optical fiber coupling unit comprising an optical fiber and a sleeve, which sleeve is arranged on an end portion of the optical fiber and terminates flush with the associated extreme end of the optical fiber, so that on the one

extreme end there is formed a continuous coupling face, with which the optical fiber coupling unit can be placed onto an optical waveguide component to establish an optical coupling.

19. A method of producing an optical fiber coupling unit as claimed in claim 1, in which a sleeve is pushed onto an end portion of an optical fiber and is fastened on the optical fiber, and in which the sleeve with the optical fiber accommodated in it is ground and/or polished at the extreme end, thereby forming a continuous coupling face at the extreme end.
20. The method as claimed in claim 19, the optical fiber being fastened on the sleeve by being bonded into the sleeve.